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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,264	07/30/2001	Noriyuki Kaifu	35.C15636	8673

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EXAMINER

QUIETT, CARRAMAH J

ART UNIT	PAPER NUMBER
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2612

DATE MAILED: 01/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/916,264

Applicant(s)

KAIFU ET AL.

Examiner

Carramah J. Quiett

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10 and 11 is/are rejected.
- 7) ☒ Claim(s) 8-9 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 0201 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 01242005.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The information disclosure statements (IDS), filed on 10/16/2001 and 07/25/2002, have been placed in the application file, and the information referred to therein has been considered as to the merits.

### ***Drawings***

3. Figures 6, 7A, 7B, and 7C should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The disclosure is objected to because of the following informalities: On page 10, line 7; the word "rest" should be "reset". Appropriate correction is required.
5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1, 3, and 6** are rejected under 35 U.S.C. 102(b) as being anticipated by Spivey et al. (U.S. Pat. #5,528,043).

As for **claim 1**, Spivey discloses an imaging system, in figure 1, comprising: an image-sensing unit (ref. 1) having a non-destructive read function (col. 4, lines 3-10), adapted to an object image. Additionally, Spivey inherently has a method for a subtractor circuit adapted to sequentially output a plurality of corrected values, wherein each of said plurality of corrected values is a difference between a first frame included in a plurality of frames sequentially read out non-destructively from said image sensing unit and a second frame included in said plurality of frames, read out before the first frame. In col. 14, lines 53-55, Spivey states that a dark field image is subtracted from a white field image to produce a residual frame and eight of the residual frames are outputted and averaged to form one calibration image.

For **claim 3**, Spivey further discloses an imaging system wherein said image sensing unit has pixel portions (fig. 6, ref. 11) each including a photoelectric conversion element (fig. 3, ref. 10; col. 3, line 49 – col. 4, line 3) and a transistor for reading (fig. 5, ref. 41), the photoelectric element of the pixel portion being connected to a control terminal of said transistor. Please read col. 4, lines 47-63 and see figure 5.

For **claim 6**, Spivey further discloses an imaging system wherein a switching transistor is connected serially to said transistor in order to select the pixel portions in a row direction (fig. 5, ref. 30; col. 4, lines 47-63).

8. **Claims 1-3, 6-7, and 10-<sup>11</sup>~~12~~** are rejected under 35 U.S.C. 102(b) as being anticipated by Zhou et al. (U.S. Pat. #5,909,026).

As for **claim 1**, Zhou discloses an integrated sensor, in figure 1A, comprising: an image-sensing unit (ref. 110) having a non-destructive read function (col. 1, lines 44-45), adapted to an object image (col. 2, lines 39-42); and a subtractor circuit (fig. 2B, ref. 240; col. 5, line 20 – col. 6, line 30) *adapted to* sequentially output a plurality of corrected values, wherein each of said plurality of corrected values is a difference between a first frame included in a plurality of frames sequentially read out non-destructively from said image sensing unit and a second frame included in said plurality of frames, read out before the first frame. Please see figs. 1A-4J and read col. 5, line 6 – col. 6, line 40.

For **claim 2**, Zhou discloses an integrated sensor further comprising a driver circuit (col. 3, lines 54-57)) including a comparator circuit (fig. 1B, refs. 181-184) for comparing the output value read out from said image sensing unit with a reference value (col. 4, lines 12-24), and said driver circuit changing a read mode of said image sensing unit to a normal read mode of the output value exceeds the reference value (col. 4, lines 25-42), wherein the normal read mode resets said image sensing unit and reads out a signal after the reset (col. 4, lines 19-22/34-42).

For **claim 3**, Zhou discloses an integrated sensor (in fig. 2A) wherein said image sensing unit has pixel portions (ref. 210) each including a photoelectric conversion element (ref. 211) and

a transistor for reading (ref. 215), the photoelectric element of the pixel portion being connected to a control terminal of said transistor. Please read col. 4, lines 53-61.

For **claim 6**, Zhou discloses an integrated sensor (in fig. 2A) wherein a switching transistor (ref. 216) is connected serially to said transistor in order to select the pixel portions in a row direction (fig. 2A; col. 4, lines 53-61).

For **claim 7**, Zhou discloses an integrated sensor (in fig. 2A) wherein a transistor for reset (ref. 214) is connected serially to the photoelectric conversion element (col. 4, lines 53-61), and said driver circuit controls said transistor for reset by using a mode switching signal to change the read mode either to the normal read mode or to the non-destructive read mode. Please read col. 5, lines 35-49 where the reset phase is the normal read mode and the sampling phase is the non-destructive read mode.

For **claim 10**, Zhou discloses an integrated sensor (in fig. 1B) further comprising a counter (refs. 185-188) connected to an output portion of the comparator circuit, wherein said counter counts the number of times when the output value read out from said image sensing unit exceeds the reference value (col. 4, line 12-52), and said driver circuit changes the read mode from the non-destructive read mode to the normal read mode when the count of said counter reaches a predetermined value. Please read col. 5, lines 35-52 and col. 6, lines 41-62.

For **claim 11**, Zhou discloses an integrated sensor further comprising a memory circuit *adapted to* storing the corrected values for each frame, wherein for the frame following the normal read mode, a corrected value for the previous frame stored in said memory circuit is output. Please read col. 3, lines 35-44; col. 4, lines 25-33/43-52; and col. 8, lines 43-59.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. **Claims 4 and 5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Spivey et al. (U.S. Pat. #5,528,043) in view of Morishita (U.S. Pat. #6,489,618).

For **claim 4**, Spivey does not further disclose an imaging system wherein a load is connected to one non-control terminal of said transistor (ref. 41) and constitutes an amplifier having a voltage gain of about 1. In the same field of endeavor, in figure 15 Morishita teaches an image pickup device having pixel portions each including a photoelectric conversion element (121) and a transistor (129) for reading. Morishita also teaches a load which is connected to one non-control terminal of the transistor (129) and constitutes an amplifier having a voltage gain of about 1 (col.8 line 65 - col. 9 line 3; col. 13 lines 25-28). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a load on the invention of Spivey to improve the converting of a radiation image into an electric image (col. 1, lines 5-11).

For **claim 5**, Spivey, as modified by Morishita, teaches that said load is a constant current source (see Fig. 15 of Morishita).

***Allowable Subject Matter***

11. **Claims 8 and 9** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Claim 8** is allowed because the prior art does not teach or fairly suggest an image sensing apparatus according to claim 2, wherein further comprising a memory table for storing position information of a defective pixel of said image sensing unit, wherein said driver circuit does not change the read mode if an output value for the defective value is to be output, by referring to the position information stored in said memory table.

**Claim 9** is allowed because the prior art does not teach or fairly suggest an image sensing apparatus according to claim 2, wherein further comprising a memory table for storing position information of an invalid area other than an image sensing area of said image sensing unit, wherein said driver circuit does not change the read mode if an output value for the invalid area is to be output, by referring to the position information stored in said memory table.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure are:

U.S. Patents

Fossum et al. (#5,471,515)

Active pixel sensor (APS) with non-destructive readout.

Fröjdh (#6,307,915)

Active pixel sensor (APS) with modes for non-destructive readout and reset readout of image signals.

Carrol et al. (#6,404,854)

Active pixel sensor (APS) with modes for non-destructive readout and normal readout of image signals.

Bruijns (#5,778,044)

X-ray imaging apparatus utilizes a subtractor circuit for correcting defective image signals.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carramah J. Quiett whose telephone number is (703) 305-0566. The examiner can normally be reached on 8:00-5:00 M-F. Beginning March 2005, the examiner's telephone number will be changed to (571) 272-7316.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.J.Q.  
Jan. 24, 2005



NGOC-YEN VU  
PRIMARY EXAMINER